Exotic Plant Surveys at Chino Hills State Park

I. Introduction

Exotic plant surveys were conducted in 2001 at Chino Hills State Park as part of the California Department of Parks and Recreation Inventory, Monitoring and Assessment Program (IMAP) pilot program. The primary goal of these surveys was to locate and quantify infestations of invasive plant populations at Chino Hills State Park to supplement and update the data on exotics housed at Inland Empire District Headquarters. Although the entire park (approximately 12,422 acres at the time of the surveys) was the study area, these surveys focused mostly on a few highly invasive species with discrete, relatively manageable infestations, mostly within easily accessible areas along roads and trails, and also on some previously known problem areas. Much of the fieldwork was conducted in conjunction with the rare plant surveys and the vegetation sampling that were being conducted during the same time period. The fieldwork was done by Kim Marsden, Associate State Park Resource Ecologist, and Melanie Howe, Environmental Services Intern, both from the Southern Service Center and both formally trained in botanical science and very familiar with exotic species in southern California. Currently, the Inland Empire District is conducting ongoing eradication efforts for sweet fennel (*Foeniculum vulgare*) in several areas of the park, giant reed (*Arundo donax*) in the Carbon Canyon area of the park, and tree of heaven (*Ailanthus altissima*) in portions of Lower Aliso Canyon.

II. Methods

A). Survey procedure

Surveys for exotic plant species were conducted from late March through December 2001. Because most of the serious exotic infestations within the park occur along roads and trails or in the near vicinity of roads and trails, the surveys were conducted by vehicle or foot along these access routes. Survey methods consisted of searching areas while driving travelable roads and walking trails, searching difficult to access areas with binoculars, and noting exotic plant occurrences while traversing vegetated areas on foot during vegetation and rare plant surveys.

When exotic plants were located, their occurrence was recorded as either an area polygon containing many plants, a point indicating one to a few plants, or a line along a roadway indicating a linear infestation. For display purposes all recorded polygons and lines were converted to point locations (see Figure 1). The Trimble GeoExplorer® 3 Geographic Positioning System (GPS) unit (Appendix I) was used to record exotic plant occurrence data. Each occurrence was assigned an identifying number and the infestation was generally quantified and recorded on the standardized field data form (Appendix II). This information was entered into the IMAP database (completed field data sheets are

FIGURE 1. Exotic plant species locations in Chino Hills State Park from 2001

included in Appendix III). After compiling all the field data, an exotic plant distribution map was generated using Geographic Information System (GIS) technology (Figure 1).

III. Findings

An effort was made to record and map all of what are generally considered to be the most invasive exotic plant species within the park, including sweet fennel, tree-of-heaven, artichoke thistle (*Cynara cardunculus*), pampas grass (*Cortaderia selloana*), African fountain grass (*Pennisetum setaceum*), and tamarisk (*Tamarix* spp.). In addition to mapping the species considered to be most invasive, other exotic plant species, those considered somewhat benign, were also recorded and mapped when encountered (*e.g.*, tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*), Russian thistle (*Salsola tragus*). This was done to document occurrences of those species that may be spreading unnoticed within the park so that Inland Empire District may track the spread of these species in the future if they chose to do so. Horticultural ornamentals that were encountered within areas of native vegetation were also recorded and mapped, including Brazilian pepper tree (*Schinus terebinthifolius*), Peruvian pepper tree (*Schinus molle*), china berry tree (*Melia azedarach*), fan palms (*Washingtonia robusta*), century plants (*Agave* sp.), and fruit trees.

The exception to the mapping effort is the Carbon Canyon area of the park where several exotic plant species are known to occur. Most of those considered to be highly invasive have been previously recorded by the District or are undergoing treatment and/or removal by the District, they include giant reed, artichoke thistle and Cape ivy (*Senecio mikanioides*). Other exotics that occur in the Carbon Canyon area are various non-native annual grass species (*Avena* sp., *Bromus diandrus, Lolium multiflorum*), tocalote (*Centaurea melitensis*), Italian thistle (*Carduus pycnocephalus*), poison hemlock (*Conium maculatum*), milk thistle (*Silybum marianum*), tree tobacco, castor bean, black mustard (*Brassica nigra*), eucalyptus trees (*Eucalyptus* spp.), and Peruvian pepper trees (Alissa Ing, personal communication, June 2002). Additionally, no attempt was made to map the exotic plant species that are very widespread throughout the park, and therefore not easily eradicated, such as black mustard, tocalote, and Italian thistle. Black mustard and tocalote are prevalent in areas of recent or historic disturbance (*e.g.*, fire, grazing). Black mustard occurs in a mosaic within the non-native annual grassland community and in disturbed coastal sage scrub communities; tocalote occurs mainly in disturbed coastal sage scrub communities. Although found throughout the park, Italian thistle is most prevalent in dense walnut/oak woodlands where it occurs as the dominant understory species; its general distribution in the woodlands is indicated on Figure 1.

Most of the exotic plant species that occur in Chino Hills State Park have been evaluated for the degree of their invasiveness by the California Exotic Pest Plant Council (CalEPPC). Table 1 provides the list of exotic plant species observed within Chino Hills State Park in 2001 and their general location and CalEPPC listing. Of the species listed in Table 1, nine are considered highly invasive by CalEPPC (*i.e.*, they occur on List A) and two are listed as noxious weeds in the Jepson Manual (1993). See Table 2 for explanation of the CalEPPC listing categories.

Table 1. List and general location of the exotic plant species observed in Chino Hills State Park in 2001. See Table 2 for explanation of Cal EPPC lists.

SCIENTIFIC NAME (COMMON NAME) FAMILY	HABITATS OF CONCERN AND OTHER COMMENTS [1]	Cal EPPC LIST[2]	LOCATION AT CHSP
Arundo donax (giant reed) Poaceae	Riparian areas	A-1	Carbon Cyn, Santa Ana River
Cortedaria selloana (pampas grass) Poaceae	Horticultural; coastal dunes, coastal scrub, riparian, grasslands	A-1	Telegraph Cyn, South Ridge Trail
*Cynara cardunculus** (artichoke thistle) Asteraceae	Coastal grasslands; CA noxious weed list "B"	A-1	South Ridge Trail
Foeniculum vulgare (wild fennel) Apiaceae	Grasslands; esp. SoCal, Channel Is., cult. garden herb not invasive	A-1	South Ridge Tr., Scully Ridge Tr.
Pennisetum setaceum (African fountain grass) Poaceae	Horticultural; grasslands, dunes, desert canyons, roadsides	A-1	South Ridge Tr., Telegraph Cyn.
Senecio mikanioides (Cape ivy, German ivy) Asteraceae	Coastal riparian areas, also SoCal (San Gabriel Mtns.)	A-1	Carbon Canyon
Tamarix species (salt cedar) Tamaricaceae	Desert washes, riparian areas, seeps and springs	A-1	Lower Aliso Canyon
Ailanthus altissima (tree of heaven) Simaroubaceae	Riparian areas, grasslands, oak woodlands, esp. GV and SoCal	A-2	Lower Aliso Cyn, South Ridge Trail
Atriplex semibaccata (Australian saltbush) Chenopodiaceae	SoCal, coastal grasslands, scrub, high marsh of coastal salt marshes	A-2	Bane Cyn toward Slaughter
Bromus madritensis ssp. *rubens* (red brome) Poaceae	Contributing to SoCal scrub type conversion; increases fire frequency	A-2	Bane Canyon, Scully Hill
Brassica nigra (black mustard) Brassicaceae	Coastal communities, esp. fog-belt grasslands; disturbed areas	B	Widespread in many habitats
Carduus pycnocephalus (Italian thistle) Asteraceae	Grasslands, shrublands, oak wdlds.; CA. noxious weed list "C"	B	Widespread in all habitat types
Centaurea mellitensis (tocalote) Asteraceae	Widespread; perhaps a more serious invader than currently recognized	B	Widespread in disturbed areas
Conium maculatum (poison hemlock) Apiaceae	Mainly disturbed areas but may invade wildlands	B	Telegraph Cyn, Carbon Cyn
Ricinus communis (castor bean) Euphorbiaceae	SoCal coastal riparian habitats	B	Bane, Carbon, Telegraph Cyns
Schinus molle Peruvian pepper Anacardiaceae	Horticultural; invasive in riparian habitats (San Diego, Santa Cruz Is.)	B	Lower Aliso Canyon
Schinus terebinthifolius Brazilian pepper Anacardiaceae	Horticultural; riparian areas	B	Lower Aliso Canyon
Avena barbata (slender wild oat) Poaceae	Lower elev. in SoCal; coastal sage scrub in deeper soil, disturbed sites	Annual grasses	Widespread in many habitats
Bromus diandrus (ripgut brome) Poaceae	Coastal dunes, coastal sage scrub, grasslands	Annual grasses	Extremely widespread
Lolium multiflorum (Italian ryegrass) Poaceae	Wetland areas esp. vernal pools in SD Co.; common in disturbed sites	Annual grasses	Four corners area
Nicotiana glauca (tree tobacco) Solanaceae	Threat to coastal scrub, chaparral?	Need more information	Scully Hill; Bane, Lower Aliso Cyn

[1, 2] California Exotic Pest Plant Council, *Exotic Pest Plants of Greatest Ecological Concern in California, October1999*. Sacramento, California.

* Considered a noxious weed in James C. Hickman, ed., *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, California.

Pipthatherum miliaceum (smilo grass) Poaceae	Aggressive in SoCal creeks and canyons	Need more information	Santa Ana River, Coal Canyon
*Salsola tragus** (Russian thistle) Chenopodiaceae	Restricted to disturbed sites	Need more information	Telegraph Cyn, Lower Aliso Cyn
Tamarix aphylla (athel) Tamaricaceae	Spreading in Salton Sea area; threat to wildlands?	Need more information	Bane Canyon
Silybum marianum (milk thistle) Asteraceae	Disturbed areas, esp. overgrazed moist pasturelands	Considered, but not listed	Widespread

Table 2. California Exotic Pest Plant Council list categories[3] for non-native species that are considered serious problems in wildlands.

List A	Most invasive wildland pest plants; documented aggressive invaders that displace natives and disrupt natural habitats. Includes two sub-lists; List A-1: Widespread pests that are invasive in more than 3 Jepson[4] regions, and List A-2: Regional pests invasive in 3 or fewer Jepson regions.
List B	Wildland pest plants of lesser invasiveness; invasive pest plants that spread less rapidly and cause a lesser degree of habitat disturbance; may be widespread or regional.
Red Alert	Pest plants with potential to spread explosively; infestations currently small or localized. If found, alert CalEPPC, County Agricultural Commissioner or California Department of Food and Agriculture.
Need More Information	Plants for which current information does not adequately describe nature of threat to wildlands, distribution or invasiveness. Further information is requested from knowledgeable observers.
Annual Grasses	A preliminary list of annual grasses, abundant and widespread in California, that pose significant threats to wildlands. Information is requested to support further definition of this category in the next List.
Considered But Not Listed	Plants that, after review of status, do not appear to pose a significant threat to wildlands.

IV. Data Management

Software packages used in the data analysis and production of this report include Microsoft (MS) Word 2000 and ArcView GIS version 3.2. Digital versions of the report, graphics, GIS data (ArcView shape files), data files and data forms are included on a CD in a pocket following the appendices. Appendix IV provides a list of files contained on this disk.

[3] California Exotic Pest Plant Council, *Exotic Pest Plants of Greatest Ecological Concern in California, October1999*. Sacramento, California.

[4] James C. Hickman, ed., *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, California.

V. Future Monitoring

Although an attempt was made to map most of the highly invasive species infestations within the park, it is likely that not all occurrences of each species were located. Therefore, any ongoing efforts to monitor and eradicate exotic plant species within the park should include recording, mapping, and monitoring new occurrences for prioritization in the eradication program.

Among the priority species that have been targeted for control by the District are sweet fennel, tree-of-heaven, and giant reed. Two small and localized infestations of the highly invasive artichoke thistle were identified in the park in 2001; one adjacent to South Ridge Trail west of the junction with Diemer Trail and one adjacent to West Ridge Road in Coal Canyon near the western park boundary. Because these infestations are small and quite manageable, it would benefit the park if they were be added to the list of ongoing eradication efforts before they can proliferate and spread out of control, becoming more costly and time-consuming to eradicate.

VI. Contact Information

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VII. References

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